**ALCHEMY, SECTIONS I & II STUDY GUIDE**

**Lessons 1-10**

**Main Ideas**

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| **Essential Questions** | **Guiding Questions** |
| 1) What is matter composed of? | 1. What is chemistry? 2. What is matter? 3. How are the smallest bits of matter described? |
| 2) How can we organize the building blocks of the universe (elements)? | 1. What do the chemical names and symbols tell you about matter? 2. What happens to elements in a chemical change? 3. How is the periodic table organized? 4. What information does the periodic table reveal about the elements? 5. Why do elements in the same group have similar properties? |
| 3) How can we make new substances with different properties? | 1. What happens to matter when it is changed? 2. What are signs of a chemical reaction? |
| 4) How can you use the properties of a substance to identify it? | 1. How do you determine the masses and volumes of different substances? 2. How can you use mass and volume to determine the identity of a substance? |

**Students will know:**

1. Chemist’s tools
2. Safety rules
3. Early chemistry history
4. Ways to determine volume of a substance
5. Relationship of density and types of matter
6. Difference between matter and non-matter
7. How to describe matter and phases with chemical names and symbols
8. Evidence of a chemical change
9. How periodic table is organized (Mendeleev and modern)
10. How to obtain information from periodic table
11. Periodic trends including similarity of elements in the same group

**Students will be able to:**

1. Choose the appropriate laboratory tool for measuring particular quantities
2. Describe changes in the physical properties of a substance
3. Differentiate between examples of matter and non-matter
4. Determine the volume of liquids and solids
5. Determine the densities of different types of matter
6. Identify different types of matter based on density
7. Determine if a new chemical substance has been formed in an experiment
8. Interpret chemical observations
9. Identify a chemical change
10. Sort the elements into a table based upon patterns in chemical and physical properties
11. Determine properties of elements based upon position on periodic table

**Vocabulary**

* actinides
* alkali metal
* alkaline-earth metal
* aqueous
* atom
* atomic mass
* atomic mass unit (amu)
* atomic number
* chemical change
* chemical name
* chemical reaction
* chemical symbol
* chemistry
* compound
* density
* extensive property
* group
* halogens
* hypothesis
* intensive property
* lanthanides
* law of conservation of matter
* main-group elements
* mass
* matter
* meniscus
* metalloids
* metals
* noble gases
* nonmetals
* periodic
* periodic table
* periods
* phase
* properties
* reactivity
* transition elements
* volume
* water displacement